Food-based natural products for cancer management: Is the whole greater than the sum of the parts?

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Abstract

The rise in cancer incidence and mortality in developing countries together with the human and financial cost of current cancer therapy mandates a closer look at alternative ways to overcome this burgeoning global healthcare problem. Epidemiological evidence for the association between cancer and diet and the long latency of most cancer progression have led to active exploration of whole and isolated natural chemicals from different naturally occurring substances in various preclinical and clinical settings. In general the lack of systemic toxicities of most 'whole' and 'isolated' natural compounds, their potential to reduce toxic doses and potential to delay the development of drug-resistance makes them promising candidates for cancer management. This review article examines the suggested molecular mechanisms affected by these substances focusing to a large extent on prostate cancer and deliberates on the disparate results obtained from cell culture, preclinical and clinical studies in an effort to highlight the use of whole extracts and isolated constituents for intervention. As such these studies underscore the importance of factors such as treatment duration, bioavailability, route of administration, selection criteria, standardized formulation and clinical end points in clinical trial design with both entities. Overall lack of parallel comparison studies between the whole natural products and their isolated compounds limits decisive conclusions regarding the superior utility of one over the other. We suggest the critical need for rigorous comparative research to identify which one of the two or both entities from nature would be best qualified to take on the mantle of cancer management.

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